

REMARKS

Claims 1-4 are present in this application. Claim 1 is independent.

Allowable Subject Matter

Applicant thanks the Examiner for indicating that claims 2 and 4 are allowable.

Claim Rejection – 35 U.S.C. § 102; Kubota

Claims 1 and 3 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Application Publication 2001/0024181 (Kubota) in view of U.S. Patent 6,727,877 (Itakura). Applicant respectfully traverses this rejection.

Present Fig. 6 shows an example of a table memory for an LCD. Representative gray scale levels of image data values in the current vertical display period are provided as columns. As can be seen across the top row in the figure, the intervals of the representative gray scale levels are at varying intervals. In particular, the interval between 0 and 8 is 8, the interval between 8 and 16 is 8, while the interval between 16 and 32 is 16, etc.

The representative gray scale levels of image data value in the previous vertical display period are shown as rows. Similar to the current display period, as shown in the first column the intervals of representative gray scale levels of previous vertical display period are at varying intervals. In particular, the interval between 0 and 32 is 32, while the interval between 32 and 48 is 16, and the interval between 48 and 64 is 24, etc.

Claim 1 is directed to embodiments for a table memory such as the table shown in Fig. 6, wherein the table stored in the table memory includes compensation signal data corresponding to a combination of a “representative gray scale level” of the image signal in the current vertical display period and that of the image signal in the previous vertical display period set at “varying intervals, close and dispersed intervals,” “depending on the optical response characteristics of the LCD panel.”

The Office Action generally refers to paragraphs 0049 and 0050 of Kubota, along with the Graphic base table 26 shown in Fig. 1, as well as Fig. 7, for teaching the claimed elements. The Office Action indicates that Kubota does not teach the representative gray scale levels for each of vertical display periods to be set at varying intervals, close and dispersed intervals, depending on the optical response characteristics of the LCD panel.

The Office Action instead relies on Itakura for making up for this deficiency. In particular, the Office Action appears to indicate that Itakura’s teaching of compensating a “field-through voltage V_p ” for each gradation for a present period teaches the claimed feature.

Fig. 7 of Kubota shows a table for a relation between previous brightness and the next brightness for an LC cell having the characteristic shown in Fig. 2. (para. 0061). The table in Fig. 7 shows intervals of representative gray scale levels that are at uniform intervals of “10.”

Itakura discloses an example method of driving a liquid crystal display wherein positive pole reference driving voltage and negative pole reference driving voltage are set with each associated gradation so that a difference V_{dr} in voltage between an average of driving voltage associated with a maximum gradation and an average of driving voltage associated with a

minimum gradation would become approximately equal. Figures 16 and 18 show examples wherein reference driving voltages V_{a1} to V_{a8} are set with a total of 8 associated levels of gradation. The reference voltages V_{a1} to V_{a8} are set so as to compensate a field-through voltage V_p for each gradation “because the field-through voltage V_p becomes smaller in a higher gradation (gray scale), and becomes greater in a lower gradation (gray scale)” (Itakura, col. 14, lines 45-47).

In other words, Itakura’s compensation for field-through voltage does not constitute a compensation signal value for a combination of a gray scale level of an image signal in the current display period and a gray scale level of an image signal in the previous display period. As such, Itakura’s gradation compensation values in Fig 16 or Fig. 18 are not the same type of values contained the table of Fig. 7 of Kubota. Thus, Applicant submits that one of ordinary skill in the art would not combine the teachings of Itakura and Kubota in a manner that would make up for the above stated deficiency in Kubota.

Furthermore, since Itakura sets a reference driving voltage for compensating a field-through voltage V_p for each gradation (gray scale), only reference driving voltage associated with a representative gradation (gray scale) for the present vertical period is set.

In contrast, the present invention compensates optical response speed of a liquid crystal display that differs with gray scale “transitions” from previous to current vertical display periods. Thus unlike Itakura, in the present invention each compensation signal data value corresponds to the “combination” of a representative gray scale level of the present vertical period and a representative gray scale level of the previous vertical period. Itakura’s “gradation

compensation” corresponds to voltage compensation value for the present display period, and is not a compensation for transition between gray scale levels.

Unlike Itakura, the representative gray scale level of the present vertical period and the representative gray scale level of the previous vertical period are each set at close and dispersed intervals, respectively.

Therefore, Applicant submits that Kubota and Itakura, either alone or in combination, fail to teach or suggest, among other things, that “the table stored in the table memory stores each compensation signal data value corresponding to the combination of a representative gray scale level of the image signal in the vertical display period and that of the image signal in the previous vertical display period, and the representative gray scale levels for each are set at varying intervals, close and dispersed intervals, depending on the optical response characteristics of the LCD panel.” Because Kubota and Itakura fail to teach or suggest each and every claimed feature of claim 1, Applicant requests that the rejection be reconsidered and withdrawn.

Conclusion

In view of the above amendment, Applicant believes the pending application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Robert W. Downs (Reg. No. 48,222) at the telephone number of (703) 205-8000, to conduct an interview in an effort to expedite prosecution in connection with the present application.

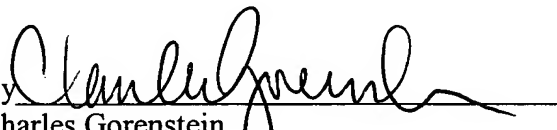
Application No. 10/622,570
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If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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